

ABSTRACT OF THE DISCLOSURE

A novel optical recording material is provided, which is capable of recording and reading an information signal by utilizing a change in the double refraction  
5 caused by a change in the molecular orientation of a side-chain type polymer liquid crystal which has an electrocyclic-reaction-type photochromic compound (or a residue thereof).

An optical recording material of the present  
10 invention is composed of a side-chain type polymer liquid crystal which contains an electrocyclic reaction type photochromic compound, or a side-chain polymer liquid crystal having in a polymer chain thereof a monomeric unit to which the photochromic compound is bonded. As  
15 the electrocyclic-reaction-type photochromic compound, a photochromic diarylethene compound is preferable. In order to perform optical recording, the optical recording material, which is subjected to uniaxial orientation processing, is employed.

20 The optical recording is carried out by irradiating this optical recording material with an information signal which comprises a light with such a wavelength that is capable of changing the structure of the photochromic compound at a temperature near a clearing  
25 point ( $T_c$ ) of the side-chain type polymer liquid crystal. By the irradiation, the molecular orientation of the side-chain type polymer liquid crystal is changed, so

that the information signal is recorded.

Reading of record is carried out by reading out as a modulation of polarized light of an incident light a change in the double refraction of the side-chain type polymer liquid crystal caused by a change in the molecular orientation in the side-chain type polymer liquid crystal at a temperature less than the glass transition temperature ( $T_g$ ) of the side-chain type polymer liquid crystal. Even if light with the same wavelength as that of the light used for the optical recording is used for reading, the information signal recorded in this optical recording material is not destroyed.